

An Organosilicon-Based Dental Bur And A Composition For Preparing The Same

Technical Field

5 The present disclosure relates to a dental bur for polishing tooth. Particularly, the dental bur carries a working surface, which is abrasive yet relatively resilient in texture, to polish one or more surfaces of a tooth when the working surface is brought into contact with the tooth and being actuated to move in high speed displacing against the surface to be polished. Also, the present disclosure provides a composition for forming at least the working or polishing
10 surface of the disclosed dental bur. The disclosed composition can be used to fabricate a polishing head having the working surface.

Background

Rotary dental burs are common operational tool for periodontal reconstruction, root planning,
15 gingival curettage and other treatment for periodontal related diseases. The dental burs generally have a shaft or shank section carrying a bulging or enlarged head portion where an abrasive surface is located for shaping or restoration tooth. The dental practitioners may use these burs to remove decay tooth structure off the periodontium, prior to deposition of the dental filing, to reconstruct the tooth structure. And, the head portion of the bur is preferably
20 driven into a high speed rotational or vibrational movement to generate sufficient friction force thereof to scrape off undesired tooth or periodontal structures. Owing to the nature of the tasks performed, erosion onto the polishing head or polishing surface of the dental bur is inevitable. Frequent replacement of worn or degraded burs head with a new one is common in practice, with incurrence of extra operational cost. Hence, effort has been made in
25 researching ways to prolong usable life of the dental burs. For example, Snaper discloses, in United States patent application no. 4681154, the idea to vacuum deposit metal nitride layer for covering diamond particles disposed on the working surface of a dental bur. Snaper claims that the nitride coating layer provides greater protection to the working surfaces of the dental bur. Similar protective coating of metal nitride is taught in United States patent
30 application no. 5704787 too. Other forms of protective coating or coating composition offering similar function can be found in United States patent application no. 6364662, which proposes a dental tool bit with cutting head layered with hydrogenated coating composed of

diamond-like carbon (DLC), amorphous diamond, crystalline diamond, or a combination thereof. United States patent publication no 2006/0269901 provides further disclosures regarding new diamond-like carbon coating with at least 5 atomic percent of hydrogen.

5 Though these diamond or diamond-like coated burs show good abrasiveness required for teeth restoration, they are not entirely free of shortcomings to function as dental restorative tools. In some cases, the burs are so abrasive that natural tooth structure can be accidentally removed even under minimal contact with the burs. High abrasiveness also tends to flatten natural shape of the tooth that aesthetic appearance of the treated tooth is adversely affected
10 instead. Thus, rubber or elastic polisher, with relatively lower abrasiveness than its rigid counterparts, are preferably employed in tooth restoration especially for pre-treating the tooth surface before the final polishing work using the hard rigid dental burs. United States patent application no. 4447208 discloses a soft and resilient dental polishing bur claiming to be safe for use without injuring gingiva and mucous membrane. Dental bur with similar features and
15 functionalities is offered in another United States patent application no. 5078754 by Jefferies et.al. The rubber polisher of dental burs preferably has an elastic matrix scattered with the abrasive particles or grains that the elastic matrix, generally, is a polyurethane-based products. In view of the resilient nature of the rubber polisher, it is possible to apply the like polisher for daily dental care and not restricted solely for tooth restoration by dental practitioners.
20 However, polyurethane-based rubber polisher disclosed in the aforesaid disclosure may not be ideal for such use with considerations that polyurethane can become easily degraded in a highly humid environment. Particularly, the polyurethane-based bur can be possibly decomposed by fungus with excess humidity present in the bathroom where the bur is likely to be stored and used as a toiletry. Several researches have reported potential polyurethane
25 decomposition in line with fungus growth. Highly humid environment as in personal bathroom inevitably promotes fungus growth on the polyurethane-based bur followed by subsequent degradation. Apart from that, degradation of polyurethane composite can occur in conjunction with the use of toothpaste containing chloride. Polyurethane is known being vulnerable towards chloric acids, which is likely produced from zinc chloride, a common
30 chemical compound found in toothpaste. Consequently, a personal dental bur having working surface featuring acceptable biocompatibility and inertness against the working environment is desired.

Summary

One object of the present disclosure is to provide a dental bur being fabricated from biocompatible material for daily use in polishing tooth surface. The dental bur preferably has a polishing surface impregnated with scattered abrasive particles to be brought into contact
5 with the tooth surface to be polished.

Another object of the present disclosure aims to offer a dental bur with a working portion or polishing head at least partly fabricated to have an abrasive yet elastic coating or surface for polishing the tooth. The relatively soft and resilient nature of the polishing head solely aims
10 to glaze the surface of the tooth instead of grinding off tooth structure.

Further object of the present disclosure is to provide a disposable dental polishing bur, which can be manufactured at relatively low cost and thorough a simple manufacturing process substantially free from any side products. The disclosed dental resorts inexpensive raw
15 materials in constructing the polishing head or the abrasive polishing surface, working towards to offer an affordable personal dental bur.

Aspects of particular embodiments of the present disclosure address at least one aspect, problem, limitation, and/or disadvantage associated with dental bur for polishing tooth
20 surface. According to several embodiments, the present disclosure includes a dental bur for tooth polishing comprising a shank having a first end and a second end; and a polishing head, engaged to the first end of the shank, for providing a polishing surface thereof. The polishing surface preferably comprises abrasive particles dispersed in a matrix of polyvinylsiloxane-based material, that the polishing surface is adapted to polish surface of a tooth upon being
25 brought into contact with and driven in a movement displacing against the surface of the tooth.

To produce a relatively low cost and disposable dental bur, the abrasive particles employed in several embodiments of the present disclosure are any one or combination of aluminum oxide
30 and silicon carbide, which are relatively cheaper in price compared to diamond or diamond-like particles.

The disclosed dental bur can be manufactured to have different abrasiveness and implemented according to various applications and tooth surfaces. The dental bur equipped with the preferred abrasiveness can be prepared by way of dispersing and/or impregnating the abrasive particles to the polyvinylsiloxane-based material in a ratio of 6:4 – 3:7 by weight percentage. Additionally, the abrasiveness can be further determined through using abrasive particles of preferred diameter, e.g. particles with average diameter of 10 to 250 micron, to obtain the desired outcome and effect.

Accordingly, the matrix is made elastic in line with implementation of the polyvinylsiloxane-based material for some embodiments. And, in some other embodiments, the polishing head is substantially cylindrical, conical or pear-like in shape having average diameter of 3 to 5.5 mm in relation to the elongate center axis of the bur.

To improve or enhance polish efficiency, the polishing surface may bear straight, cross or oblique cuttings on the external surface of the polishing head in a few embodiments. Presence of these cutting may facilitate creation of the glossy appearance on the tooth.

According to several embodiments, abrasiveness of the disclosed dental burs is visually indicated, but not limited to, by way of color code and/or alphanumeric symbol carved on the dental bur. The visual indicator facilitates selection of dental bur with the preferred abrasiveness for tooth polishing.

For coupling to a handpiece or handle, the first end of the shank is fabricated with a carved structure fixable to a handpiece, which carries a driving mechanism capable of actuating the dental bur to displace against the tooth's surface.

Another major aspect of the present disclosure is to provide a composition forming at least a working surface of a dental bur for tooth polish comprising abrasive particles dispersed in a matrix of polyvinylsiloxane-based material. Preferably, the abrasive particles can be any one or combination of aluminum oxide and silicon carbide.

For several embodiments, the abrasiveness of the polishing surface, derived from the disclosed composition, depends on the size of abrasive particles employed and it is preferred to have average particle diameter ranged from 10 to 250 micron. In a number of embodiments, the abrasiveness is determined by the ratio of the abrasive particles and the polyvinylsiloxane-based material by weight percentage and the ratio is 6:4 – 3:7.

Brief Description of Drawings

Fig. 1 (a) shows one embodiment of the shank without the polishing head and (b) a top view of the shank;

Fig. 2 shows front view one embodiment of the disclosed dental bur with the polishing head fabricated into substantial pear shape;

Fig. 3 shows side view of another embodiment of the disclosed dental bur with the polishing head prepared in a substantial cylindrical shape; and

Fig. 4 is a flowchart illustrating one feasible process flow in producing the disclosed polishing head.

Detailed Description

The detailed description set forth below with the appended drawings is intended as a description of the presently exemplified embodiments of dental instruments or tools in accordance with the present disclosure and is not intended to represent the only forms in which the present disclosure may be constructed or utilized. The description set forth the features and the steps for constructing and using the dental burs or instruments of the present disclosure in connection with the illustrated embodiments. It is to be understood, however, that the same or equivalent functions and structures may be accomplished by different embodiments that are also intended to be encompassed within scope of the disclosure. Also, as denoted elsewhere herein, like element numbers are intended to be indicate like or similar elements or features.

As illustrated in Fig. 1 and 2, the present disclosure includes a dental bur 100 for tooth polishing. Typically, the dental bur 100 is designed to be used concurrently with a handpiece or handle (not shown) bearing a driving mechanism to actuate the disclosed dental bur 100 to move in a rotational or vibrational motion against the tooth's surface to be polished. In several preferred embodiments, the dental bur 100 comprises a shank 110 having a first end 111 and a second end 112; and a polishing head 150, engaged to the first end 111 of the shank 110, for providing a polishing surface 155 thereof. The shank 110 generally adopts a rod-like shape, with a body 114 spanning between the first 111 and second end 112. The dental bur 100 is adapted to be driven to rotate at the elongate center axis 200 of the shank 110. The first end 111 is preferably a projection extending away from the elongate body 114. The first end 111 is sized, though not necessarily, to have a diameter smaller and a length shorter than the elongate body 114. A flange surface 113 is provided at the point where the first end 111 joined to the body 114 of the shank 110. Preferably, few embodiments of the present disclosure have the first end 111 fabricated with a geometrical surface profile to interlock with a removable polishing head 150. As shown in Fig.1a, the first end 111 carries a plurality of external ribs 127 on the side surface running in a fashion parallel to the rotational axis 200 of the shank 110. Each of the vertically stretching ribs 127 are equally spaced apart and arranged around the circumferential surface or the side surface of the first end 111 that such arrangement of the ribs gives the first end 111 a cross-section similar to a cogwheel 140, as present in Fig.1b. The ribs 127 serves as the cogs 147 to interlock or engage with the polishing head 150. Correspondingly, a vertically extending groove 148 is located in between two neighboring cogs 147. Preferably, the cogs 147 possess greater circumferential width or arc on the circumferential surface of the first end 111 than the grooves disposed there too. Circumferential width of each cog may cover about 18 to 25 degree, α , of the circular rim of the first end 111 in relation to the rotational axis of the shank 110. On the contrary, each single groove 148 merely constitutes around 12 to 18 degree, β , of the circular rim of the first end 111.

In further embodiments of the disclosed dental bur 100, the second end 112 of the shank 110 is fabricated with a carved structure 120 fixable to a handpiece, and can be driven to carry out displacement against surface of the tooth. According to some embodiments, the carved structure 120 has an indented ring recess 118 fabricated at the second end 112 of the shank

110 substantially encircling the rotational axis 200 and a segmental cutoff 118 stretching in a direction parallel to the rotational axis 200 at the second end 112 intersecting with the nearby ring recess 117. The ring recess 117 is preferably defined in between the tip 119 of the second end 112 and the adjacent body 114 along the shank 110. Both tip 119 and the body 114 form flanges sandwiching the defined ring recess 117. Preferably, the length of the segmental cutoff 118 along the shank 110 precedes the length of the ring recess 117 that the ring recess 117 and the segmental cutoff 118 collectively provides an I-shaped layout, as shown in Fig.1, when being viewed from a specific angle. It is important to be noted that one ordinary skilled artisan shall appreciate the fact that the carved structure 120 can take on other configurations or establishments, as long the configuration matches the mechanism found in the handpiece, besides the abovementioned embodiments, to fasten or couple the shank 110 to the handpiece.

In accordance with some preferred embodiments, the shank 110 can be made of any strong yet chemically inert metal or alloy, including stainless steel, titanium, nickel-titanium alloy, titanium-aluminum-vanadium alloy, aluminum, or tungsten carbide. More preferably, the metal or alloy employed should have good resistance towards rust formation, which can likely be triggered in the high humid environment such as bathroom, where the disclosed dental bur 100 likely stored. Water or rust resistance coating may be applied to the external surface of the shank 110 to improve service life of the disclosed dental bur 100 in accordance with a plurality of embodiments.

Pursuant to the preferred embodiments of the present disclosure, at least the polishing surface 155 of the polishing head 150 comprises abrasive particles 160 dispersed in a matrix of polyvinylsiloxane-based material, such that the polishing surface 155 is adapted to polish surface of a tooth upon being brought into contact with the surface and driven in a movement displacing against the surface of the tooth. In several embodiments, the polishing head 150 and the shank 110 can be an integral piece carrying the abrasive polishing surface 155, with the polishing surface 155 being secured onto the polishing head 150 by way of an external coating. Neither the polishing head 150 nor the secured coating of the disclosed dental bur 100 in such embodiments is removable or exchangeable by the user. The polishing head 150 may be fabricated with some external protuberance or ribs (not shown) to be overlaid by the

polyvinylsiloxane-based coating. The additional contact of these protuberances and the overlaying polishing surface 155 can significantly reinforce adherence or engagement thereof. The abrasive particles 160, scattered within the matrix of polyvinylsiloxane-based material to give rise of the polishing surface 155, are any one or combination of aluminum oxide and silicon carbide.

As setting forth above, the entire polishing head 150 is prepared to be removable or replaceable in several preferred embodiments. Having removable polishing head 150 in the mentioned embodiments allows the user to replace worn polishing head 150 with new one to maintain satisfactory polish efficiency. As a result of the disposable and replaceable polishing head 150, the dental bur 100 described in the present disclosure is more affordable and cost-effective for the user. Despite being fashioned to be a detachably engagement, both interlocked shank 110 and the polishing head 150 are preferably driven to displace against the tooth's surface akin to an integral piece. Particularly, displacement movement towards the tooth surface inevitably generates a shearing force to act against the displacement movement. The generated shearing force can cause undesired lateral shift, or even dislodgement, of the engaged polishing head 150 from the first end 111 of the shank 110, especially when the engagement formed is not strong enough to withhold the shearing force. Such unregulated shift or dislodgement will lead to irregular displacement speed onto the surface of the tooth varying polishing outcome or, even sometimes, failure in carrying out the polish originally designed for.

To establish a strong engagement between the first end 111 of the shank 110 and the removable polishing head 150, the polishing head 150, in at least one embodiment, may contain a hollow passage (not shown) accessible via an opening located at the bottom of the removable polishing head 150. The first end 111 of the shank 110 can be slidably inserted into the hollow passage to mount the removable polishing head 150 to the shank 110 forming a complete dental bur 100. The internal surface of the polishing head 150 defining the hollow passage is preferably fabricated with geometrical surface profile matching to the one carried on the first end 111 of the shank 110 to realize interlocking of the shank 110 and the polishing head 150. For instance, the hollow passage adopts a shape dimensioned to be compatible with the first end 111 of the shank 110 having a cogwheel-like cross-section

described in the foregoing. With the hollow passage configured to be compatible with the first end 111 of the shank 110, the present disclosure can couple the removable polishing head 150 to the shank 110. Typically, the internal surface defining the hollow passage possesses also grooves intermittently positioned between two adjacent ribs. Each rib 127 on the first end 111 of the shank 110 shall slide and fit into a corresponding groove prepared in the interior hollow passage of the polishing head 150. Fitting the longitudinal ribs 127 of the shank 110 into the corresponding grooves of the hollow passage interlocks the coupled shank 110 and polishing head 150. This interlocking arrangement results in resistance against any lateral movement of the engaged polishing head 150 in relation to the shank 110 at the rotational plane. Specifically, abutment of each rib 127 on the first end 111 of the shank 110 to the adjacent rib disposed on the internal surface of the hollow passage prohibits lateral movement of the engaged polishing head 150, that the polishing head 150 can only be slidably detached from the shank 110. More preferably, the hollow passage is sized approximate to or slightly smaller than the dimension of the first end 111 that the first end 111 of the shank 110 has to be snug-fitted into the polishing head 150. Particularly, the fitted first end 111 mildly compresses the internal surfaces, which encompass the passage and are in immediate contact with the first end 111, and creates great friction thereby to ensure removal of the polishing head 150 from the first end 111 can only be achieved with sufficient pulling force applied thereby. Similar to the foregoing description, the entire removable polishing head 150 can be made of polyvinylsiloxane-based material, with the abrasive particles 160 of any one or combination of aluminum oxide and silicon carbide dispersed in the matrix of the polyvinylsiloxane-based material. The external surface of the removable polishing head 150, in these embodiments, is the polishing surface 155 to work on the tooth.

According to a number of embodiments, the removable polishing head 150 is a multilayer construct with at least an interior core layer and an exterior abrasive layer overlaying the core layer to provide the polishing surface 155. In more specific, the interior core layer preferably encloses the hollow passage, as detailed above, for slidably engaging with the first end 111 of the shank 110. The core layer is made of a resilient material which can be, but not limited to, polyvinylsiloxane-based material. Elasticity of the inner core layer enable snug-fitting of the shank 110 thereof. Most preferably, the interior core layer is free from containing any abrasive particles. The exterior abrasive layer, on the contrary, is manufactured from

polyvinylsiloxane-based material containing dispersed abrasive particles 160 of aluminum oxide, silicon carbide or any combination derived thereof. The exterior layer furnishes the polishing surface 155 of the disclosed dental bur 100 in these embodiments. For other embodiments, the interior core layer and the exterior abrasive layer are different in colors.

5 Different colored layers in the disclosed dental bur 100 enable the user to visually gauge the wearing state of the used polishing head 150. Considerable erosion at the exterior layer shall consequently expose the underneath interior layer prompting timely replacement of the removable polishing head 150. Specifically, presence of one or more patches of a color varied from the exterior layer implies that the polishing head 150 has been critically worn and
10 should be replaced.

Surfaces of a tooth are naturally irregular in shape rather than plain flat surface; there exists remote area where conventional rigid dental bur fails to access let alone to carry out the polish. More likely, greater amount of time have to be spent to clean such area point by point
15 instead of covering a stretch of area as feasible in a planar surface. The dental bur 100 of the present disclosure shows certain extent of elasticity or resiliency especially at least for the polishing surface 155, which is capable of being temporarily deformed to comply contour of the tooth. With the imparted resiliency, the disclosed dental bur 100 can gain access to remote area on the tooth easier compared to conventional rigid dental bur or polishing head
20 150. By utilizing polyvinylsiloxane-based material in producing at least the polishing surface 155 of the polishing head 150, the polishing surface 155 or, more precisely, the matrix of the polishing surface 155 becomes elastic and capable of complying contour of the tooth at certain extent to accomplish better polish effect. Likewise, the matrix of the polishing head 150 or the exterior abrasive layer is rendered with the preferred elasticity by fabricating these
25 constructs using polyvinylsiloxane-based material.

Efficiency of the disclosed dental bur 100 can be improved by inscribing straight, cross or oblique cuttings to the polishing surface 155 or polishing head 150. Particularly, void space in the cuttings facilitates brief deformation of the polishing surface 155, thus, rendering
30 remote area on the tooth to become accessible to the deformed polishing surface 155. The void space offers additional room for lateral expansion or deformation of the

polyvinylsiloxane-based matrix when the polishing head 150 is pressed against and conformed to the external outline of the tooth in the polishing process.

With regard to abrasiveness of the polishing surface 155, it is determined by both average particle diameter of the abrasive particle 160 and amount of the abrasive particles 160 in relation to the polyvinylsiloxane-based material used. To attain the desired abrasiveness adequate for tooth polish, the abrasive particles 160 have an average particle diameter of 10 to 250 micron in a plurality of preferred embodiments. Moreover, the abrasive particles 160 and the polyvinylsiloxane-based material are in a ratio of 6:4 - 3:7 by weight percentage. The polyvinylsiloxane-based material should be present in an appropriate amount to retain or hold the dispersed abrasive particles 160 in the matrix formed thereby minimizing breakoff of the retained particles 160 throughout the polishing process.

As aforementioned, the described dental bur 100 can be prepared to have different abrasiveness. The like feature offers users of the present disclosure the latitude to replace or exchange a polishing head 150 secured to the dental bur 100. Particularly, a user may possess two or more removable polishing heads 150, each is equipped with a distinctive abrasiveness, to be readily exchanged and replaceable one another onto the dental bur 100. More preferably, the abrasiveness of a polishing surface 155 or head in the present disclosure can be denoted by way of visual cues to the users. Color code and/or alphanumeric symbol can be incorporated to the dental bur 100 or the polishing surface 155 to represent and indicate the degree of abrasiveness. For example, a red-colored replaceable polishing head 150 may be impregnated with coarser abrasive particles compared to the like member green in color. As such, the color code aids the user to select and replace the polishing head 150 with ease.

In addition, the polishing head 150 can adopt various shapes for different embodiments. User can simply select the dental bur 100 with the desired shape, particularly corresponding to the contour or surface of the tooth to attain optimal polish efficiency. The polishing head 150 can be cylindrical, conical or pear-like in shape as illustrated in Fig.2 to Fig.3. For instance, dental bur 100 of pear shape may be employed to polish central and/or lateral incisor, while molar or premolar tooth can be glazed using dental bur 100 of conical shape. Nonetheless, the

dental bur 100, especially for the polishing head 150, has average diameter of 3 to 5.5 mm in relation to the elongate center axis of the bur

According to another aspect of the present disclosure, a composition for forming at least part of a polishing surface 155 of a dental bur 100 is disclosed herein. The polishing surface 155 is fabricated to be abrasive to carry out tooth polishing. Besides being adapted to form only the polishing surface 155, an integral polishing head 150 carrying the polishing surface 155 can be manufactured using the mentioned composition as well. The manufactured polishing head 150 in turn is detachably coupled to a shank 110 to construct a dental bur 100 as foregoing described.

In several embodiments, the composition comprises abrasive particles 160 dispersed in a matrix of polyvinylsiloxane-based material. Preferably, the abrasive particles 160 are any one or combination of aluminum oxide and silicon carbide.

Abrasiveness of the polishing surface 155, derived from the disclosed composition, corresponds to both average particle diameter of the abrasive particle and the relative amount of the abrasive particles 160 present in the polyvinylsiloxane-based matrix. In a plurality of preferred embodiments, the abrasive particles 160 have an average particle diameter of 10 to 250 micron to arrive at the desired abrasiveness sufficient for tooth polishing. Moreover, the abrasive particles 160 and the polyvinylsiloxane-based material of the disclosed composition are in a ratio of 6:4 – 3:7 by weight percentage.

One of process flows for fabrication of the disclosed polishing head 150 is illustrated in Fig.4. Preferably, the abrasive particles are pretreated with washing and/or soaking process by a solvent to remove and/or dissolve contaminants adhered to the surface of the particles. Preferably, the solvent is alcohol, acetone, acetonitrile or any combination derived thereof. More preferably, alcohol such as isopropanol, methanol or other alcohol is employed in the cleaning step. The cleaned abrasive particles are then dried in an oven before being added into the liquefied polyvinylsiloxane-based material to form a homogeneous mixture. The homogeneous mixture is then molded to the preferred shape and dimension, preferably through an injection molding or hot pressing molding process, to finally give the disclosed

polishing head, upon hardening of the molded mixture. In some other embodiments, the homogeneous mixture of abrasive particles and the polyvinylsiloxane-based material may be molded onto the shank to produce the irreplaceable dental bur. It is possible to produce the disclosed polishing head by way of hot pressing.

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It is to be understood that the present invention may be embodied in other specific forms and is not limited to the sole embodiment described above. However modification and equivalents of the disclosed concepts such as those which readily occur to one skilled in the art are intended to be included within the scope of the claims which are appended thereto

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Claims

1. A dental bur for tooth polishing comprising
a shank having a first end and a second end; and
5 a polishing head, engaged to the first end of the shank, for providing a polishing
surface thereof, the polishing surface comprising abrasive particles dispersed in a
matrix of polyvinylsiloxane-based material,
wherein the polishing surface is adapted to polish surface of a tooth upon being
brought into contact with the surface and driven in a movement displacing against the
10 surface of the tooth.
2. The dental bur of claim 1, wherein the abrasive particles are any one or combination
of aluminum oxide and silicon carbide.
- 15 3. The dental bur of claim 1, wherein the polishing head is fashioned to be detachably
engaged to the first end of the shank and replaceable.
4. The dental bur of claim 1, wherein the abrasive particles have an average particle
diameter of 10 to 250 micron.
- 20 5. The dental bur of claim 1, wherein the abrasive particles and the polyvinylsiloxane-
based material are in a ratio of 6:4 – 3:7 by weight percentage.
6. The dental bur of claim 1, wherein the matrix is elastic.
- 25 7. The dental bur of claim 1, wherein the polishing surface has abrasiveness indicated by
way of color code and/or alphanumeric symbol carved on the dental bur.
8. The dental bur of claim 1, wherein the polishing surface bears straight, cross or
30 oblique cuttings on the external surface.
9. The dental bur of claim 1, wherein the second end of the shank is fabricated with a
carved structure fixable to a handpiece.

10. The dental bur of claim 1, wherein the polishing head is substantially cylindrical, conical or pear-like in shape.
- 5 11. A composition forming at least part of a polishing surface of a dental bur for polishing a tooth comprising abrasive particles dispersed in a matrix of polyvinylsiloxane-based material.
- 10 12. The composition of claim 11, wherein the abrasive particles are any one or combination of aluminum oxide and silicon carbide.
13. The composition of claim 11, wherein the abrasive particles have an averaged particle diameter of 10 to 250 micron.
- 15 14. The composition of claim 11, wherein the abrasive particles and the polyvinylsiloxane-based material are in a ratio of 6:4 – 3:7 by weight percentage.